

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions of claims in the application:

**Listing of Claims:**

1. (Currently amended) A computer-implemented database system comprising:  
a computer-implemented database engine further comprising:  
a computer-implemented page aggregator component that operates across concurrent database transactions to obtain information on aggregate size change that occurs on a database data page,[[[:]] wherein a number of copies of the database data page is copied are created and data associated with the database data page is modified by the concurrent database transactions performed on respective copies of the database data page resulting in the aggregate size change to the database data page, transaction(s) that requires modification thereof, the concurrent database transactions perform sub-page level operations on [[a]] the respective copies of the database data page;  
a computer-implemented heap allocation component that employs the information on aggregate size change to determine [[an]] availability of space for the database data page; and  
a computer-implemented lock manager that enables ~~sub-page~~ sub-page level locking across the concurrent database transactions.
- 2-4. (Cancelled)
5. (Currently amended) The system of claim 1, the computer-implemented page aggregator enables [[a]] determination of space ~~consumptions~~ consumption across a respective copy of the database data page employed by each database transaction.
6. (Currently amended) The system of claim 1, the computer-implemented page aggregator determines the space consumption across the respective copy of the database data page from information available in the lock manager.

7. (Cancelled)

8 (Currently amended) The system of claim 1, the computer-implemented heap allocation component tracks [[an]] availability of space on the database data page.

9. (Currently amended) The system of claim 1, the computer-implemented heap allocation and the computer-implemented page aggregator enforce a set of conditions on a database transaction that operates on [[a]] the database data page, such that [[a]] space availability for the database data page prior to the commit stage of the database transaction is assured.

10-12. (Cancelled)

13. (Currently amended) A computer-implemented method that facilitates synchronization in concurrent database transactions comprising:

creating a number of copies of a database data page corresponding to a number of the concurrent database transactions to facilitate modifying the database data page;

performing the concurrent database transactions on a sub-page level on the respective copies of the database data page to modify the respective copies of the database data page to facilitate modifying the database data page;

obtaining information on an aggregate size change that [[occur]] occurs on [[a]] the database data page as a result of the concurrent database transactions ~~operating~~ performed on the respective copies of the database data page; and

tracking [[a]] space availability for the database data page over all the concurrent database transactions.

14. (Previously Presented) The method of claim 13 further comprising assigning locks to a resource on the database data page.

15. (Cancelled)

16. (Previously Presented) The method of claim 13 further comprising replacing a row of the database data page with an inserting pointer.
17. (Previously Presented) The method of claim 16 further comprising inserting the row on a new database data page.
18. (Currently amended) The method of claim 14 further comprising storing the information on an aggregate size change in the locks.
19. (Currently amended) The method of claim 18 further comprising discarding the locks upon at least one of a roll back of a database transaction [[and]] or committing a database transaction.
20. (Cancelled)
21. (Original) A computer readable medium having stored thereon computer executable instructions for carrying out the method of claim 13.
- 22-30. (Cancelled)
31. (Currently amended) A method for manipulating database data in a database data page by a database transaction comprising:
- copying a database data page to a reserved space for [[the]] each database transaction of a plurality of concurrent database transactions;
  - performing the concurrent database transactions on a sub-page level on respective copies of the database data page to facilitate modifying the respective copies of the database data page;
  - retrieving information related to size change of respective copies of the database data page, based at least in part on the modification of the respective copies of the database data page, to facilitate determining an aggregate size change for the database data page; and
  - determining [[an]] the aggregate size change for the database data page.

32. (Currently amended) The method of claim 31 further comprising tracking [[a]] space availability on the database data page across a plurality of concurrent database transactions working on the database data page.
33. (Previously Presented) The method of claim 31 further comprising creating a new database data page and inserting a row therein.
34. (Previously Presented) The method of claim 33 further comprising employing a pointer in the database data page to guide a query to the row in the new database data page.
35. (Previously Presented) The method of claim 31 further comprising locking a resource at a row level on the database data page.
36. (Original) A computer readable medium having stored thereon computer executable instructions for carrying out the method of claim 31.
37. (Previously Presented) The method of claim 32 further comprising assuring availability of space on the database data page prior to a commit stage of the concurrent database transactions operating on the database data page to mitigate reorganization of data around the database data page at the commit stage.